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INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)

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Applicant's or agent's file reference E- 1724/03	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/IT 03/00405	International filing date (day/month/year) 27.06.2003	Priority date (day/month/year) 28.06.2002
International Patent Classification (IPC) or both national classification and IPC A24C5/47		
Applicant G.D SOCIETA' PER AZIONI et al.		


- This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
- This REPORT consists of a total of 4 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

 These annexes consist of a total of 8 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 22.01.2004	Date of completion of this report 23.11.2004
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**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/IT 03/00405**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

4-10 as originally filed
1-3, 3bis received on 07.04.2004 with letter of 29.03.2004

Claims, Numbers

1-10 received on 07.04.2004 with letter of 29.03.2004

Drawings, Sheets

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☐ the claims, Nos.:
☐ the drawings, sheets:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/IT 03/00405**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	1-10
	No: Claims	
Inventive step (IS)	Yes: Claims	4-10
	No: Claims	1-3
Industrial applicability (IA)	Yes: Claims	1-10
	No: Claims	

2. Citations and explanations

see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/IT 03/00405

- 1). The preamble and the feature "and of a length approximately equal to but no less than the length of the relative said strip" are known from US5474091 cited in the description. The subject-matter of claim 1 differs therefrom by the first feature of the characterising portion of claim 1.

This differentiating feature has two alternatives: "as they travel along the first portion (S1)" or "as they are transferred from said first portion (S1) to said second portion (S2)". It follows that according to claim 1 the precise location of the pitch reduction is not crucial.

US5349968 shows a similar pitch reduction as in the characterising portion of claim 1, see col. 4, l. 38-40. On col. 4, l. 55-59 the advantage of the pitch reduction is explained. The skilled person would therefore regard it as a normal design option to include this feature in the method described in document US5474091 in order to obtain the same advantage.

Moreover, there is no technical prejudice to combine the teaching of both cited documents as they relate to very similar methods.

- 2). The additional features of claims 2 and 3 are also known from US5474091, see col. 2, 2nd par.
- 3). The additional features of claims 4-10 are not shown or fairly suggested in the available prior art.

METHOD OF PRODUCING FILTER-TIPPED CIGARETTES

TECHNICAL FIELD

The present invention relates to a method of
5 producing filter-tipped cigarettes.

BACKGROUND ART

As described, for example, in GB-2241866-A, filter-
tipped cigarettes are known to be produced on a filter
assembly machine defining internally a path along which
10 elongated tobacco articles are fed in a direction
crosswise to their respective axes. The above known
filter assembly machine receives, at an input, a
succession of first tobacco articles - hereinafter
referred to as "double portions" - which, travelling
15 transversely along said path through a cutting station,
are each cut into two coaxial single portions. The single
portions of each double portion are then spaced axially
and separated by the interposition of a double filter,
which is fed to the double portion feed line by a
20 separate feed line, and forms, together with the relative
pair of single portions, a second tobacco article
hereinafter referred to as a "group".

The component parts of each group are then connected
integrally to one another at a rolling station by means
25 of a gummed strip to form a third tobacco article -
hereinafter referred to as a "double cigarette" - wherein
a central portion of the strip covers the double filter,
and the end portions of the strip cover the facing ends
of the two single cigarette portions.

As anyone skilled in the art knows, rolling the groups to form the relative double cigarettes is a highly critical step, in that rolling speed, which is a direct function of the output rate of the filter assembly machine, must be kept within a given maximum value to avoid tobacco fallout from the open ends of the single portions.

For a given output rate of the filter assembly machine, rolling speed is also known to depend directly on the pitch with which the succession of groups is fed to the rolling station.

In connection with the above, it should be pointed out that, for reasons depending mainly on the structure of the devices feeding the double portions to the filter assembly machine, the standard pitch with which the groups are fed to the rolling station is relatively long (about 37.7 mm) and, though simplifying various handling operations upstream from the rolling station, is directly and largely responsible for the rolling speed of the groups.

US-5349968-A1 discloses a method of producing filter-tipped cigarettes, in which an orderly succession of first tobacco items, each consisting of a double cigarette portion, is fed along a path, along which the first items are cut into two portions, which are connected by rolling, and by means of an outer band and the interposition of an intermediate double filter, to form an orderly succession of second items, which are cut to form a first and second succession of third items

consisting of single, side by side, oppositely-oriented cigarettes; the cigarettes in one of the two successions being turned over 180 DEG in relation to those in the other succession to form at least one stream of equioriented cigarettes for supply to a follow-up machine. The pitch of the various successions of items undergoing only one change along the entire path and in particular the pitch is reduced downstream from a rolling station.

10 To reduce rolling speed or increase the operating speed of the filter assembly machine without increasing rolling speed, US-5474091-A1 proposes feeding the double portions to the filter assembly machine with a shorter than standard pitch, i.e. a pitch approximately equal to
15 but no shorter than the length of the strips used - in actual practice, a length ranging between approximately 32 and 20 mm. According to a different embodiment shown in figure 3, US-5474091-A1 proposes reducing the pitch of the items to the above shorter pitch immediately upstream
20 from a rolling station.

Experience has shown, however, that, on the one hand, feeding the double portions to the filter assembly machine with a reduced pitch calls for pitch-reducing devices external to the filter assembly machine and
25 difficult to assemble and use, and, on the other hand, increasing the operating speed of the filter assembly machine by reducing the pitch just prior to rolling affects the reliability of the double filter feed line, which is in no way affected by the pitch reduction.

3bis.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a method of producing filter-tipped cigarettes, designed to eliminate the aforementioned drawbacks.

5 More specifically, it is an object of the present invention to provide a method capable of maximizing the output rate of the filter assembly machine, not only for a given rolling speed, but also for a given double filter supply speed.

10 According to the present invention, there is provided a method of producing filter-tipped cigarettes

CLAIMS

1) A method of producing filter-tipped cigarettes, the method comprising the steps of feeding an orderly succession of first tobacco articles (4), spaced with a first pitch (P1) and each defined by a double cigarette portion, to a first portion (S1) of a path (B) extending along a filter assembly machine (5); feeding said first articles (4) along said first portion (S1) and through a first cutting station (12) to cut said first articles (4) transversely into respective pairs of portions (13, 14), and then through spacing means (18) for axially spacing the portions (13, 14) in each said pair; feeding said pairs of spaced portions (13, 14) along a second portion (S2) of said path (B); interposing, as they travel along said second portion (S2), a double filter (21) between the portions (13, 14) in each said pair, to form a succession of second articles (29), each defined by the relative said pair of portions (13, 14) and by the relative interposed said double filter (21); applying by rolling, along said second portion (S2), a respective strip (33) to each second article (29) to connect the relative said pair of portions (13, 14) and the relative said double filter (21) and form a third article (40) defined by a double cigarette; feeding said third articles (40) along a third portion (S3) of said path (B) and through a second cutting station (45) to obtain, from each said third article (40), two fourth articles (46) oppositely oriented and each defined by a filter-tipped

cigarette; and feeding said fourth articles (46) along a fourth portion (S4) of said path (B) and through a turnover unit (50) to obtain a succession of equioriented said fourth articles (46); and being characterized by comprising the further step of subjecting said first articles (4), as they travel along said first portion (S1) or as they are transferred from said first portion (S1) to said second portion (S2), to a pitch reduction to assume a second pitch (P2) shorter than said first pitch (P1) and of a length approximately equal to but no less than the length of the relative said strip (33).

2) A method as claimed in Claim 1, wherein said first pitch is about 37.7 mm, and said second pitch (P2) ranges between 30 and 32 mm.

3) A method as claimed in Claim 2, characterized in that said second pitch (P2) is about 31 mm long.

4) A method as claimed in one of the Claim 1 to 3, wherein said pitch reduction is made at the end of said first portion (S1) as said first articles (4) are transferred from said first portion (S1) to said second portion (S2).

5) A method as claimed in one of the Claim 1 to 3,, wherein said pitch reduction is made along the first portion (S1).

6) A method as claimed in any one of the foregoing Claims, and comprising the further step of subjecting said third articles (40), as they travel along said second portion (S2), to a further pitch reduction to assume a third pitch (P3) shorter than said second pitch

(P2).

7) A method as claimed in Claim 6, wherein said further pitch reduction is made as said third articles (40) are transferred from said second portion (S2) to said third portion (S3).

8) A method as claimed in any one of Claims 1 to 7, and comprising the further step of subjecting said fourth articles (46), as they travel along said fourth portion (S4), to yet a further pitch reduction to assume a fourth pitch (P4) shorter than said third pitch (P3).

9) A method as claimed in Claim 8, wherein said yet a further pitch reduction is made as said fourth articles (46) travel through said turnover unit (50).

10) A method of producing filter-tipped cigarettes, the method comprising the steps of feeding an orderly succession of first tobacco articles (4), spaced with a first pitch (P1) and each defined by a double cigarette portion, to a first portion (S1) of a path (B) extending along a filter assembly machine (5); feeding said first articles (4) along said first portion (S1) and through a first cutting station (12) to cut said first articles (4) transversely into respective pairs of portions (13, 14), and then through spacing means (18) for axially spacing the portions (13, 14) in each said pair; feeding said pairs of spaced portions (13, 14) along a second portion (S2) of said path (B); interposing, as they travel along said second portion (S2), a double filter (21) between the portions (13, 14) in each said pair, to form a succession of second articles (29), each defined by the

relative said pair of portions (13, 14) and by the relative interposed said double filter (21); applying by rolling, along said second portion (S2), a respective strip (33) to each second article (29) to connect the
5 relative said pair of portions (13, 14) and the relative said double filter (21) and form a third article (40) defined by a double cigarette; feeding said third articles (40) along a third portion (S3) of said path (B) and through a second cutting station (45) to obtain, from
10 each said third article (40), two fourth articles (46) oppositely oriented and each defined by a filter-tipped cigarette; and feeding said fourth articles (46) along a fourth portion (S4) of said path (B) and through a turnover unit (50) to obtain a succession of equioriented
15 said fourth articles (46); and being characterized by comprising the further steps of subjecting said first articles (4), as they travel along said first portion (S1) or as they are transferred from said first portion (S1) to said second portion (S2), to a pitch reduction to
20 assume a second pitch (P2) shorter than said first pitch (P1) and of a length approximately equal to but no less than the length of the relative said strip (33); subjecting said third articles (40), as they travel along said second portion (S2), to a second pitch reduction to
25 assume a third pitch (P3) shorter than said second pitch (P2); and subjecting said fourth articles (46), as they travel along said fourth portion (S4), to a third pitch reduction to assume a fourth pitch (P4) shorter than said third pitch (P3).